RX 02 Emulator for floppy disks

Diagram labels:
- MICROPROCESSOR INPUT/OUTPUT CIRCUITS
- PHASE-LOCKED OSCILLATOR
- DRIVE NON-SERIAL INTERFACE
- DRIVE SERIAL INTERFACE
- Z-80 MICRO-PROCESSOR
- MICROPROCESSOR CONTROL (8 MHz)
- MICROPROCESSOR MEMORY
- DMA INTERRUPT LOGIC
- Q-BUS INTERFACE
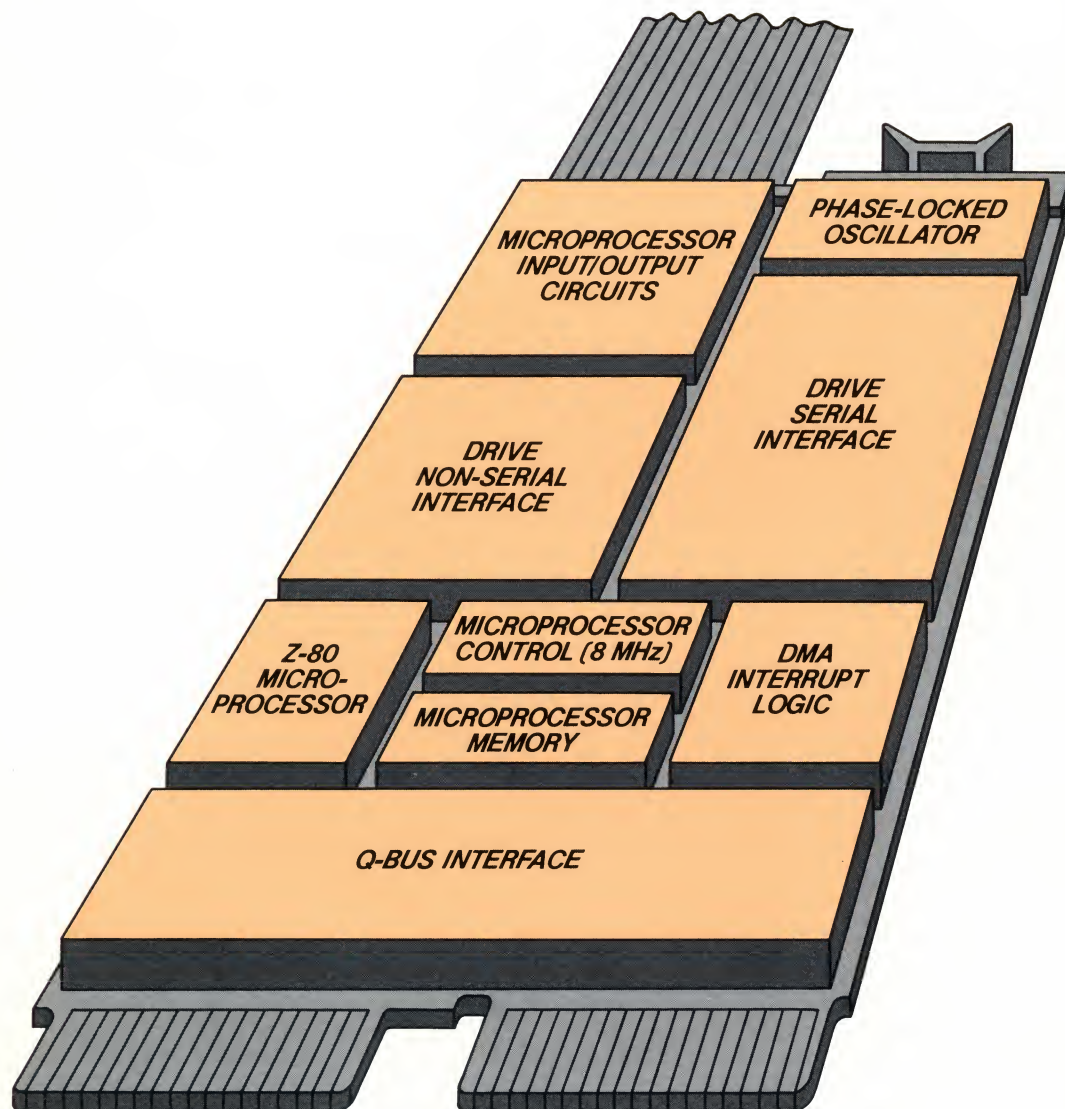
OEM features

- Complete RX 02 emulation on one dual-width card
- Card plugs directly into LSI-11
- Media compatible
- Software compatible
- Provide your own drives:
  single or double head.
- Mount in your own chassis:
  5¼"H x 19"W x 22"D
  13 cm x 48 cm x 56 cm

END USER features

- AED provides complete system:
  RX 02 emulator card
  DEC look-alike cabinet
  2 drives
  power supply
- Fully emulates RX 02 with your LSI-11, /2, /23
- Single or dual head drives available
- Runs DEC RX 02 diagnostics and has on-board self test
- Built-in bootstrap.
- Uses DEC provided software

FLEX-02 Controller

This embedded controller is dedicated to LSI-11, LSI-11/2, and LSI-11/23 users, and is 100% media and software compatible with the DEC RX 02 floppy. The following standard features are incorporated:

☑ I/O for single or dual-head drive support,
☑ DEC Q-Bus® interface,
☑ DMA interrupt logic,
☑ 8 MHz oscillator for Z-80 microprocessor, and
☑ phase locked loop for FM and MFM recording techniques.

The FLEX-02 will also run DEC's RX 02 system diagnostics. In addition, AED provides diagnostic programs including drive, interface and data reliability tests. A 512-byte PROM resides in the controller for bootstrapping the operating system code from the diskette. As an RX 02 emulator, the FLEX-02 will support all software systems that DEC provides for use with RX 02's.

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Enclosure Specifications

The complete FLEX-02 system includes a rack mountable or table-top enclosure, 5¼"H x 19"W x 22"D, which is styled to look like the DEC LSI-11 cabinet. Within this cabinet reside two single or double sided diskette drives, internal cables and a power supply. Also included is a 6-foot-long ribbon cable connecting the drives to a dual-width LSI-11 compatible controller card which plugs into the user's LSI-11. Special cable lengths can be provided.

Drive Characteristics

The FLEX-02 *single head* drive reads and writes both single and double density (RX 01 or RX 02 format) data on IBM 3741 type diskette media. Closing the spring-loaded front door panel engages the floppy disk and the drive mechanism which rotates the media at a constant 360 RPM. A DC stepper motor drives a precision lead screw which positions the read-write head at approximately 8 milliseconds per track. The recorded data is then transferred between the head and the media in bit-serial form. To provide longer life, the drive is supplied with a ferrite ceramic read/write head. Two completely independent floppy disk drives are mounted in a standard FLEX-02 cabinet.

The FLEX-02 *dual head* drive utilizes state-of-the-art technology to give the customer superior data integrity through improved diskette life, data reliability and drive serviceability. The drive utilizes the same type of IBM 3741 diskette media as the single-head drive, and consistently exceeds 1 million error-free passes during tap testing. These performance characteristics put the FLEX-02 drive in a class by itself!

The *dual head* drive is capable of directly transferring up to 1.26 M Bytes of data from the media. A stepper motor simultaneously positions both heads across 77 cylinders at 3 ms/ cylinder. Horizontal orientation provides easy access for service and insertion of media. The dual head drive will, of course, read and write single-sided media if the program accesses only one side.
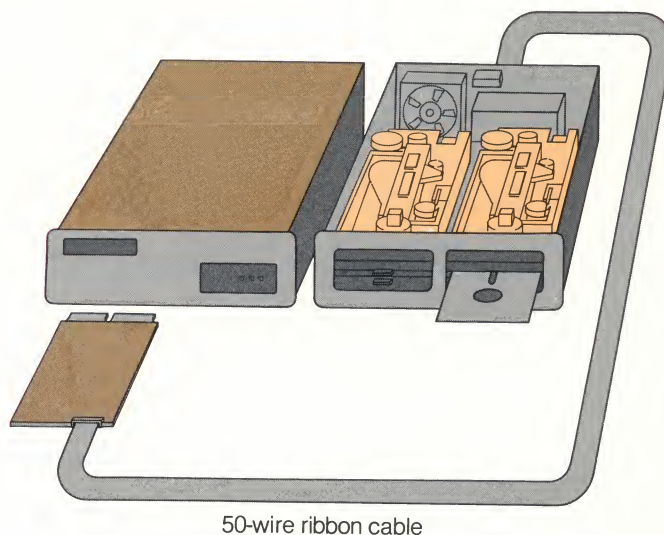
System Description

Normally, the FLEX-02 is device address code 177170_8 and the interrupt vector code is 264_8; however, both are alterable by a jumper on the controller card. When an operating system diskette is mounted in drive 0, the user activates the FLEX-02 bootstrap loader by issuing a load command on the system console or an automatic program load can be selected. This command will cause unit 0, head 0, track 0, sector 1 to be loaded into memory beginning at location 0, and, when loading is complete, control is passed to location 0. If a load error occurs, an error message will be displayed on the console device. Errors include bus time-out, controller not ready or controller error. The boot loader resides in the I/O address area, between 173000_8 and 173776_8.

Specifications

Drives Installed:	**1**	**2**
Voltage (AC):	Either 110-130 or 220-260	
Amperes @ 115 VAC:	2.0	2.3
@ 230 VAC:	1.0	1.2
Line frequency:	Either 50 or 60 Hz ± 1%	
Weight:	46 lbs	60 lbs
	21 kgs	27 kgs
Cabinet size:	5.25"H x 16.8"W x 22"D	
	13.4 cm H x 42.7 cm W x 55.9 cm D	
Operating limits:	Temperature	
	50°–100°F (10°–38°C)	
Relative humidity limits:	20%–80%	
Altitude:	−500' to 10,000' (−152m to 3048m)	

50-wire ribbon cable